

L90 ANSWER 21 OF 34 HCAPLUS COPYRIGHT ACS on STN

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TI Surface functionalization of Si nanoclusters with alkoxides and NMR studies

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SO Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003 (2003), INOR-243 Publisher: American Chemical Society, Washington, D. C.

CODEN: 69DSA4

DT Conference; Meeting Abstract

LA English

AB A room temperature reduction route was employed to produce a chloride-capped silicon nanoclusters. These active nanoclusters were readily terminated with various alcs. to give alkoxy-capped silicon nanoclusters, Si-OR (R- OH here=methanol, n-octanol, 1,3-propanediol and benzyl alc.). The terminated products are stable both in organic solvents and isolated as oils. Surface interactions between silicon and the termination groups were characterized by <sup>1</sup>H, <sup>13</sup>C NMR and FT-IR spectroscopy. The photoluminescence has been used to investigate the various terminated silicon nanoparticles, showing intensive emission peak in the blue region of the spectra. The long-term stability as a function of termination was investigated. The synthesis and characterization will be presented and discussed.

L118 ANSWER 17 OF 26 HCAPLUS COPYRIGHT ACS on STN

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TI **Surface**-chemical control of optical quenching processes at porous silicon interfaces: Generation of a stable-selective sulfur-dioxide sensor.

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SO Book of Abstracts, 219th ACS National Meeting, San Francisco, CA, March 26-30, 2000 (2000), COLL-414 Publisher: American Chemical Society, Washington, D. C.

CODEN: 69CLAC

DT Conference; Meeting Abstract

LA English

AB Visible photoluminescence from nanoscopic particles of silicon formed by anisotropic etching of single crystal silicon is a well-established phenomenon, A consensus appears to be forming that this process is associated with quantum confined states associated with the Si nanoparticles. Along with this conclusion, a variety of quenching mechanisms have been reported. Previously we indicated that static quenching via dangling bond surface states could be selected by the synthesis of a low quality ultrathin oxide layer on the porous silicon interface. We also demonstrated that such interfaces were selectively quenched by SO<sub>2</sub>(g). However, the tendency of the oxide interface to further develop in the presence of humid air made the observed quenching process unstable. We now report that, once formed, the Si/SiO<sub>x</sub> interface can be stabilized even in the presence of water at elevated temps. by modification with a silylfluorocarbon. This interface is permeable to sulfur dioxide allowing for continued quenching by this species over an extended time period, and making possible a functional sulfur dioxide sensor.